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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,464	06/23/2003	Ronald Brooks Miller	M0977.001	2224
37771	7590	01/24/2007		
John Nielsen RANDICK O'DEA & TOOLIATOS, LLP 5000 HOPYARD ROAD, SUITE 400 PLEASANTON, CA 94588			EXAMINER PATEL, ISHWARBHAI B	
			ART UNIT	PAPER NUMBER
			2841	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/24/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/601,464

Applicant(s)

MILLER, RONALD BROOKS

Examiner

Ishwar (I. B.) Patel

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 1-17,21-26,29 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 18-20,27,28 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 2, 2006 has been entered.

### ***Election/Restrictions***

2. Newly submitted claim 21-26 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The originally presented claims were directed to a structure of a printed circuit board. The new claims are directed to a method manufacturing a printed circuit board. Inventions of the original claims and the new claims are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). Etching, milling, punching or shaping are specific process steps. The product does not need such process steps. The product can be made by using ready-made channel shape sections or by bending a metal plate to desired shape.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 21-26 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Also, claims 29 and 31, with the limitation "wherein layers on the printed circuit board are laminated together during manufacture/using an adhesive coating" are not reading on the elected specie. Therefore, both the claims 29 and 31 are withdrawn from further consideration.

However, as stated in the restriction requirement in the previous action, upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species, which are written in dependent form or otherwise include all the limitations of an allowed generic claim.

Claims 18-20, 27, 28 and 30 are examined herewith.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 18-20, 27, 28 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Glance (US Patent No. 3,863,181).

Art Unit: 2841

**Regarding claim 18,** Glance, in figure 2, discloses a printed circuit board comprising: a plurality of internal signal traces (205, 204) located on a dielectric layer (203), wherein the dielectric layer is suspended in air between two flat metal plates (213, 212, column 3, line 39).

**Regarding claim 19,** Glance further discloses open-air channels (206,207) located in the flat metal plates above and below at least one of the signal traces (see figure).

**Regarding claim 20,** Glance further discloses the width of open-air channels are wider than at least one of the internal signal traces (width of channel 206, 207 are wider than the signal traces, see figure).

**Regarding claim 27,** Glance further discloses the open-air channels in the flat metal plates are located above and below at least one of the signal traces (see figure).

**Regarding claim 28,** Glance further discloses the open air channels in the flat metal plates allow for air to flow freely through the channel(s), (as the channels are open air can flow freely through the channel).

**Regarding claim 30**, Glance further discloses air is used as the primary dielectric in order to pass all high-frequency signals without discrimination (as the channels are filled with the air, the air works as dielectric).

5. Claims 18-20, 27, 28 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Dittmer (US Patent No. 5,712,607).

**Regarding claim 18**, Dittmer, in figure 1 and 2, discloses a printed circuit board comprising: a plurality of internal signal traces (60, 62) located on a dielectric layer (22), wherein the dielectric layer is suspended in air between two flat metal plates (30,32).

**Regarding claim 19**, Dittmer further discloses open-air channels (50,52) located in the flat metal plates above and below at least one of the signal traces (see figure).

**Regarding claim 20**, Dittmer further discloses the width of open-air channels are wider than at least one of the internal signal traces (width of channel 50,52 are wider than the signal traces, see figure).

**Regarding claim 27**, Dittmer further discloses the open-air channels in the flat metal plates are located above and below at least one of the signal traces (see figure).

**Regarding claim 28**, Dittmer further discloses the open-air channels in the flat metal plates allow for air to flow freely through the channel(s), (as the channels are open, air can flow freely through the channel).

**Regarding claim 30**, Dittmer further discloses air is used as the primary dielectric in order to pass all high-frequency signals without discrimination (as the channels are filled with the air, the air works as dielectric).

### ***Response to Arguments***

6. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


E. F. Tuck (US Patent No. 3,329,898) in figure 4 discloses traces (33) on dielectric 32 with channels formed on upper and lower side of the traces by plates (26,27).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (571) 272 1933. The examiner can normally be reached on M-F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on (571) 272 1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ibp  
January 20, 2007

  
Ishwar (I. B.) Patel  
Primary Examiner